REMARKS

This application is amended in a manner believed to place it in condition for allowance at the time of the next Official Action.

Claim 3 is amended.

Claim 6 is new.

Support for the new and amended claims may be found generally throughout the specification, for example, at page 1, lines 5-13 and page 8, lines 10-13.

Claims 3, 5 and 6 remain pending in present application.

Claims 3 and 5 stand rejected under 35 USC §103(a) as being unpatentable over KUZE et al. U.S. 4,119,761 (KUZE) in view of HUTKIN U.S. 4,088,544 (HUTKIN). This rejection is respectfully traversed.

KUZE fails to disclose or suggest the claimed invention for at least the three following reasons:

I. KUZE fails to disclose or suggest a passivation film.

The Official Action maintains that the heat radiation layer of KUZE is capable of performing as a passivation film.

However, the color of the heat radiation layer suggests otherwise. The color of heat radiation layer of KUZE is black. One of ordinary skill in the art would have recognized that the

black color cannot be formed by Cr_2O_3, but actually CrO_2, and that CrO_2 films cannot provide corrosion resistance. Thus, the CrO_2 heat radiation layer cannot serve as a passivation film.

On the other hand, the claimed invention is a chromium oxide passivation film. As described by Figure 2 and page 9, lines 8-10, of the present application, the 100% passivation film is included in about the first 30 nm from the outermost surface. This passivation film is Cr_2O_3, e.g., as demonstrated by the approximate elemental concentration of 40% Chromium to 60% Oxygen.

Moreover, while KUZE discloses that the heat radiation material is thermally stable, KUZE fails to disclose or suggest that the material provides any type of resistance to corrosive gases generally used in semiconductor fabrication.

To the contrary, the claimed invention exhibits resistance to highly degradable and corrosive gases, as recited in claim 3, such as silane, diborane or phosphine as recited in claim 6, which are used for semiconductor fabrication.

II. KUZE teaches away from a film that consists of oxidized chromium.

The position maintained by the Official Action is that KUZE discloses pure chromium plating, where an emissivity agent is advisable, but not required.

However, in reference to the oxidized chromium-containing layer itself, i.e., the heat radiation layer, KUZE discloses that the oxides are preferably 60 to 99% by weight of chromium based on the total weight of metals contained in the oxides. See, e.g., column 2, lines 10-23. Thus, KUZE discloses that the final heat radiation layer does not consist of oxidized chromium, as recited in claim 3.

Moreover, while the Official Action takes the position that KUZE does not require the use of an emissivity agent with a pure chromium layer, it is nevertheless necessary to diffuse an emissivity agent into a pure chromium layer in order to blacken the chromium layer to a satisfactory extent for the purpose of KUZE. Indeed, KUZE suggests that absent the agent, the pure chromium layer cannot blacken to a satisfactory extent. See, column 4, lines 12-26.

Thus, pure chromium plating absent the emissivity-improving agent, would render the heat radiant layer of KUZE unsatisfactory for its intended purpose.

III. KUZE fails to disclose or suggest a baking step.

Amended independent claim 3 requires baking the chromium-coated metallic material at a temperature of 100 °C to 200°C in a high-purity inert gas atmosphere prior to the heat treatment in an oxidizing atmosphere. KUZE, however, exposes a coated metallic material to a heat treatment in an oxidizing

atmosphere without a baking step. See, e.g., column 3, lines 1-36 and column 4, lines 39-56.

Thus for at least these three reasons, KUZE fails to disclose or suggest several features of claims 3 and 6, e.g., forming a passivation film, which consists of oxidized chromium and exhibits resistance to highly degradable and corrosive gases, and a baking step.

With respect to claim 5, KUZE fails to disclose or suggest an oxidizing atmosphere comprising oxygen diluted by an inert gas. Instead, KUZE is limited to air and wet hydrogen (See, e.g., column 3, lines 30-36).

The Official Action offers HUTKIN for teaching that a thin coating layer surface roughness mirrors that of the substrate, and that the substrate surface roughness can be controlled to affect the thin coating layer surface roughness. The Official Action concludes that it would have been obvious to control the surface roughness of the substrate in order to affect the surface roughness of the coating layer and arrive at the claimed substrate surface roughness range.

However, HUTKIN cannot remedy the shortcomings of KUZE with respect to claims 3, 5, or 6 for reference purposes. HUTKIN is directed to the production of pore-free copper foil for a circuit printing board. Chromium oxide is used as a peeling layer between copper foil and carrier substrate. While HUTKIN may discuss a chromium oxide layer and surface roughness, HUTKIN

does not disclose forming a passivation film consisting of oxidized chromium by coating, baking and heating in an oxidizing atmosphere. Rather, HUTKIN forms a chromium oxide layer by electroplating.

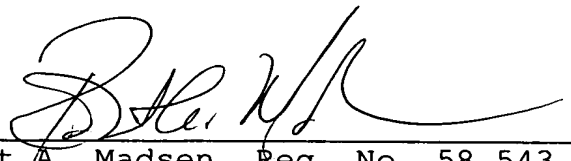
Therefore, the proposed combination cannot render obvious claims 3, 5 and 6, and withdrawal of the rejection is respectfully requested.

In view of the amendment to the claims and the foregoing remarks, applicants believe that the present application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



Robert A. Madsen, Reg. No. 58,543
209 Madison Street
Suite 500
Alexandria, VA 22314
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

RAM/lk